

**Five-Year Review Report  
Forest Glen Mobile Home Subdivision Site  
City of Niagara Falls and Town of Niagara  
Niagara County, New York**

**Prepared by  
U.S. Environmental Protection Agency**

**September 2002**



## Five-Year Review Summary Form

### SITE IDENTIFICATION

**Site name (from WasteLAN):** Forest Glen Mobile Home Subdivision

**EPA ID (from WasteLAN):** NYD981560923

**Region:** 2

**State:** NY

**City/County:** Niagara Falls/Niagara

### SITE STATUS

**NPL status:**  Final  Deleted  Other (specify) \_\_\_\_\_

**Remediation status** (choose all that apply):  Under Construction  Constructed  Operating

**Multiple OUs?\***  YES  NO

**Construction completion date:** \_\_\_\_\_

**Has site been put into reuse?**  YES  NO The site will be redeveloped after the soil remedy is completed  N/A

### REVIEW STATUS

**Lead agency:**  EPA  State  Tribe  Other Federal Agency \_\_\_\_\_

**Author name:** Gloria M. Sosa

**Author title:** Remedial Project Manager

**Author affiliation:** EPA

**Review period:\*\*** 09/26/1997 to 07/26/2002

**Date(s) of site inspection:** 6/13/2002

**Type of review:**

Post-SARA     Pre-SARA     NPL-Removal only  
 Non-NPL Remedial Action Site     NPL State/Tribe-lead  
 Regional Discretion     Statutory

**Review number:**  1 (first)  2 (second)  3 (third)  Other (specify) \_\_\_\_\_

**Triggering action:**

Actual RA Onsite Construction at OU # \_\_\_\_\_     Actual RA Start at OU# \_\_\_\_\_  
 Construction Completion     Previous Five-Year Review Report  
 Other (specify) \_\_\_\_\_

**Triggering action date (from WasteLAN):** 09/26/1997

**Does the report include recommendation(s) and follow-up action(s)?**  yes  no

**Is human exposure under control?**  yes  no

**Is contaminated groundwater under control?**  yes  no

**Is the remedy protective of the environment?**  yes  no

\* ["OU" refers to operable unit.]

\*\* [Review period should correspond to the actual start and end dates of the Five-Year Review in WasteLAN.]

## I. Introduction

This five-year review was conducted by Gloria M. Sosa, U.S. Environmental Protection Agency (EPA) Remedial Project Manager (RPM). This review was conducted pursuant to Section 121(c) of the Comprehensive Environmental Response, Liability and Compensation Act (CERCLA), as amended, 42 U.S.C. Section 9601, et seq., and 40 C.F.R. 300.430(f)(4)(ii) and in accordance with the Comprehensive Five-Year Review Guidance, OSWER Directive 9355.7-03B-P (June 2001). The purpose of a five-year review is to ensure that implemented remedies are protective of public health and the environment and that they function as designed. This document will become part of the site file.

This is the second five-year review for the Forest Glen Mobile Home Subdivision Site (Site). Upon completion of the remedial action, contaminants will remain on the site. This five-year review is being conducted as a statutory requirement.

This site is being addressed in three phases, or operable units (OUs). OU1 which consisted of the relocation of the residents of the former Forest Glen Subdivision has been completed. OU2 addresses contaminated soil and sediment. The OU2 remedy has been designed and construction began in August 2002. OU3 addresses the ground-water contamination. The OU3 remedy is currently in design and will be constructed in 2002 and 2003.

## II. Site Chronology

Table 1, below, summarizes site-related events from discovery to construction completion.

<b>Table 1: Chronology of Site Events</b>	
<b>Event</b>	<b>Date</b>
EPA collects and analyzes soil samples and contaminants found	1987
EPA conducts expanded site investigation	1988
ATSDR issues Health Advisory recommending relocation of residents	1989
Site placed on National Priorities List	1989
Record of Decision for OU 1- Relocation of Residents - ROD OU 1	1989
Remedial Action for resident relocation completed	1992
Remedial Investigation/Feasibility Study started for OU 2 and OU 3	1994
Remedial Investigation/Feasibility Study for OU 2 completed	1997

Event	Date
Record of Decision for Soil - ROD OU 2	1998
Supplemental Ground-Water Feasibility Study (OU 3) completed	1999
Record of Decision for Soil and Ground Water - ROD 3	1999
Consent Decree for RD/RA lodged in federal court	2001
Remedial Design for soil completed	2002
Remedial Action for soil started	2002

### III. Background

#### *Physical Characteristics*

The Forest Glen Subdivision Site is located in both the Town of Niagara and the City of Niagara Falls, Niagara County, New York (*see Figure 1*). The Site is accessed from Service Road, which is located off Porter Road. The Site is bounded by Expressway Village mobile home subdivision on the south; I-190 on the north and east; and the Conrail-Foote Railroad Yard on the west.

The 39-acre Site (*see Figure 2*) has three main parcels of land. East Gill Creek, a narrow, low-flowing creek, divides the site. South of East Gill Creek is the, now vacant, 15-acre Forest Glen Subdivision, which once consisted of 51 mobile and two permanent residences. Access to the Subdivision is through Edgewood Drive. South of East Gill Creek are the Edgewood Drive Wooded Lots, which are two 3-acre undeveloped wooded lots located to the north and south of Edgewood Drive. The portion of the Site north of East Gill Creek Site consists of an 18-acre parcel referred to as the Northern Aspect. The Northern Aspect includes a 15-acre undeveloped triangle of land which is bordered on the west by a berm, approximately 11 feet in height. A 1.5-acre Wooded Wetland is on the eastern side of the Northern Aspect.

#### *Geology/Hydrogeology*

The geology of the region consists predominantly of compact and generally impermeable lodgement till and glacial lacustrine clay common to the Niagara Escarpment. The lodgement till is a remnant of the receding glaciers of the last ice age. The resulting topography is generally flat because of the scouring effect of the glacier, and it is poorly drained because of the impermeability of the glacial lacustrine clay and glacial till.

The regional overburden consists of glaciolacustrine deposits (clay) and clay till deposits overlying the Lockport Dolomite bedrock. The Lockport Dolomite is a karst formation, generally 150 feet of dolostone overlying 120 feet of limestones and shales, including the impermeable Rochester Shale, below which is

limestone and sandstone, overlying the Queenstown Shale. The bedrock beneath the Site and throughout the region dips gently to the south at 29 feet per mile.

The Lockport Dolomite is the major water-producing formation of the area. At the site, the hydrogeology is defined by three hydrostratigraphic zones: perched overburden water, shallow bedrock and deep bedrock. The overburden extends approximately from zero to 20 feet below ground surface (BGS). Because of the low permeability of the overburden clay and till, perched ground-water conditions were encountered at the Site. The shallow bedrock zone extends from 16 to 28 feet BGS. Ground water in this zone flows both vertically and horizontally through an interconnecting system of closely-spaced joints and bedding plane fractures. The deep bedrock zone is encountered at depths of 40 to 45 feet BGS. There is a zone of competent dolostone between the shallow and deep bedrock zones. It is probable that hydraulic communication occurs between the bedrock zones.

### *Land and Resource Use*

The site is located in an area zoned for mixed residential, commercial and industrial use. The southern portion of the Site, including the Subdivision, was until recently zoned for residential land use. However, the City of Niagara Falls and the Town of Niagara in late 1998 and early 1999, respectively, rezoned these parcels of land to commercial/light industrial. The entire Site is now zoned commercial/light industrial.

The population of the City of Niagara Falls is approximately 62,000. The population of Niagara County is approximately 221,000. The population of the Town of Niagara is approximately 10,000. Approximately 500 people live within one-half mile of the Site.

A municipal water system serves the City of Niagara Falls and the Town of Niagara. General land use and drinking water sources in the vicinity of the site have not changed since the signing of the soil and groundwater Records of Decision.

### *History of Contamination*

The Forest Glen Subdivision Site was found to be contaminated with volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and metals. The contaminants of concern at the site are: benzo(a)pyrene; vinyl chloride; aniline; phenyl isothiocyanate; diphenylamine; 2-mercaptobenzothiazole; 2-anilinobenzothiazole; perylene; n,n-diphenyl-1,4-benzenediamine; phenothiazine; and, benzothiazole. Investigations have determined that the source of contamination is wastes disposed at the site.

### *Initial Response*

EPA first became involved in Forest Glen in 1987 when both the New York State Department of Environmental Conservation (NYSDEC) and the Niagara County Department of Health (NCHD) brought it to the Agency's attention. In 1987, EPA collected soil samples in the northern portion of the subdivision.

Analytical results for these samples indicated that volatile and semi-volatile organic chemicals and heavy metals were present at varying concentrations. In addition, numerous tentatively identified compounds (TICs) were noted at high concentrations. In an effort to determine if these compounds were present at other locations within the Subdivision, an expanded site investigation was conducted in September 1988. Analytical results for these samples concluded that high concentrations of TICs were present at additional locations in the northern portion of the Subdivision.

In a March 9, 1989 Health Consultation, the Agency for Toxic Substances and Disease Registry (ATSDR) classified the Forest Glen Subdivision Site as posing a potential health threat to residents. ATSDR did not recommend the relocation of the residents at that time, but, instead indicated that TICs should be positively identified so that their health effects could be determined.

EPA executed interim measures to stabilize conditions and protect the public at the site, including collection, staging, and securing drums of waste that were located in the areas north and east of the Subdivision. EPA also installed temporary fencing around areas of suspected contamination in the two wooded areas north and south of Edgewood Drive. In addition, an area where contaminants were detected in high concentrations in surface soils was temporarily covered with concrete.

EPA conducted another sampling event in April 1989. The analysis of these soil samples positively identified aniline, phenothiazine, mercaptobenzothiazole, and benzothiazole present in the soils at significant concentrations. EPA also conducted an air sampling program which included the collection of samples of ambient air at locations throughout the Subdivision and beneath several mobile homes and from the basement of one permanent residence. The air sampling activities did not identify any of the compounds detected during the April 1989 sampling.

In June 1989, the New York State Department of Health (NYSDOH) conducted an exposure survey at the Forest Glen Subdivision. In that survey, 39 people from 23 households reported having contact with chemical wastes, and 45 people reported health problems that they believed were associated with chemicals on the site.

Based on the positive identification of aniline, phenothiazine, mercaptobenzothiazole, and benzothiazole, together with the presence of semi-volatile polyaromatic hydrocarbons (PAHs), ATSDR issued a Preliminary Health Assessment for the Forest Glen Subdivision on July 21, 1989. It stated that the Site posed a significant threat to public health because of possible contact with contaminated soils and wastes and advised that immediate action be taken to relocate residents of the entire Subdivision.

On July 26, 1989, EPA, through an interagency agreement with the Federal Emergency Management Agency (FEMA), began the temporary relocation of residents from the Forest Glen Subdivision. On July 31, 1989, ATSDR issued a Public Health Advisory recommending that individuals be disassociated from the site, that is, relocated, and that the site be placed on the National Priorities List (NPL). The Site was

listed on the NPL in November 1989. Placement on the NPL enabled EPA to take remedial action at the site.

#### *Basis for Taking Action*

Hazardous wastes on the Site are a threat to human health and required the relocation of all residents on the Site. Contamination exists in the soil, sediments and ground water of the Site. Some ground-water contamination extends off the Site property boundaries.

### **IV. Remedial Actions**

#### *Operable Unit 1 - Relocation*

In December 1989, EPA issued a Record of Decision (ROD) selecting permanent relocation of the residents of the Forest Glen Subdivision as the remedial action for the first operable unit (OU1).

EPA entered into an Interagency Agreement with FEMA to implement the remedy. FEMA relocated the residents from June 1990 through December 1992.

#### *Operable Unit 2 - Contaminated Soil and Sediment*

On March 31, 1998, EPA issued a ROD which addressed contaminated soil and sediment. This ROD provided for the excavation, consolidation and onsite capping of wastes. Wastes would be excavated from the former Subdivision and consolidated and capped in the Northern Aspect so that the former Subdivision would be suitable for residential development. The ROD also called for the excavation of sediments from East Gill Creek with disposition of these sediments under the cap. In addition, the ROD called for either capping or excavating contaminated sediments from the Wooded Wetland area.

On September 30, 1999, EPA issued a ROD for contaminated groundwater which also amended the 1998 ROD for contaminated soils and sediments. The main change to the soil remedy resulted from the City of Niagara Falls and the Town of Niagara rezoning the Site property for commercial/light industrial use. The 1999 soil remedy called for the placement of a cap over most areas of soil contamination according to the specification in 6 New York Code of Rules and Regulations, Title 6, Part 360, for landfill caps. Limited volumes of contaminated soil and sediment were to be excavated and consolidated under the cap. The remedy also called for securing institutional controls to prohibit activities that would compromise the integrity of the cap and implementation of a long-term inspection and maintenance program to ensure cap integrity. This remedy would allow for the redevelopment of the entire site for commercial use.

The soil cleanup objectives for the areas of the site where soils are to be excavated are stated in the NYSDEC Technical and Administrative Guidance Memorandum (TAGM). The sediment cleanup objectives for the areas where sediments are to be excavated are the NYSDEC Technical Guidance for Screening Contaminated Sediments.

The Goodyear Tire & Rubber Company, Inc. (Goodyear) entered into a Consent Decree with EPA in 2001 to perform the remedial design and remedial action at the Forest Glen Subdivision Site. The remedial design for soil was approved in July 2002. The implementation of the remedy has begun and will be completed by June 2003. Contaminated soil is being excavated and consolidated under a cap. Sediments from East Gill Creek are also being excavated and consolidated. A Wetlands Mitigation Plan, prepared as part of the remedial design, concluded that capping the contaminated sediments in the Wooded Wetland would alter the character of the wetland. Therefore, six inches of sediment were removed and consolidated and six inches of clean material will be added and the Wetland will be restored.

### *Operable Unit 3 - Contaminated Groundwater*

The September 30, 1999 ROD also selected a remedy for contaminated ground water which included two major components. The first component is the extraction of contaminated ground water from the on-property plume and the transfer of the extracted ground water via sanitary sewer to the City of Niagara Falls Wastewater Treatment Plant.

The second component relies on natural attenuation to remediate the off-property contaminated ground water. A monitored natural attenuation study, including a baseline investigation and ground-water modeling, is being performed to evaluate intrinsic biodegradation and other natural attenuation processes. If monitoring indicates that natural attenuation is not effective in remediating the off-property ground-water contamination, active remedial measures will be considered.

Ground-water monitoring data indicate that the plume is stabilized and is not moving uncontrolled to areas where it could affect drinking-water supplies or the environment. The ground-water remedy also includes the implementation of a long-term ground-water monitoring program to assess whether the ground-water extraction system is functioning as designed and natural attenuation is occurring.

The remedial action objective for ground water is to restore the potable aquifer to drinking-water quality. It is expected that the on-property plume will be restored to drinking-water standards in approximately 7 years. It is expected to take approximately 12 to 14 years for the off-property plume to be restored to drinking-water standards.

Goodyear is currently performing the ground-water remedial design. A baseline Monitored Natural Attenuation Study was performed which included ground-water sampling. The ground-water remedial design will be completed in 2002 and the construction for the ground-water remedial action will be completed in 2003.

The Applicable or Relevant and Appropriate Requirements for groundwater cleanup include EPA's Maximum Contaminant Levels (MCLs) and New York State's groundwater quality standards.

A previous five-year review report was signed September 26, 1997. The report recommended selection of a remedy for OU2 and OU 3. These actions have been completed.

## **V. Five-Year Review Process**

### *Administrative Components*

Gloria M. Sosa, EPA Remedial Project Manager, conducted the five-year review. This is a PRP-lead site. The Goodyear Tire & Rubber Company, Inc., has provided information for this review. Interviews with local residents were not deemed necessary for the preparation of this five-year review.

### *Community Involvement*

The EPA Community Relations Coordinator for the Forest Glen Subdivision Site, Michael Basile, published a notice in the *Niagara Gazette*, a local newspaper, on June 7, 2002, notifying the community of the initiation of the five-year review process. The notice indicated that EPA would be conducting a five-year review of the remedy for the site to ensure that the implemented remedy remains protective of public health and the environment and is functioning as designed. The notice included the RPM's address and telephone number for questions related to the five-year review process or the Forest Glen Subdivision Site. No comments have been received. One past issue associated with the Site pertained to future land use and whether the Site would allow for commercial or residential use of the property. In 1999, the City of Niagara Falls and the Town of Niagara rezoned the area for commercial development. Since that time, EPA is unaware of any opposition to that decision.

A notice will be published in the *Niagara Gazette* when the five-year review report is completed and a copy is available to be viewed by the public at the EPA Niagara Falls Public Information Office.

### *Document Review*

The following documents, data, and information were reviewed in completing the five-year review:

- Record of Decision, EPA, September 1989
- Remedial Investigation Report, CDM FPC, 1997
- Record of Decision, EPA, September 1998
- Supplemental Ground-Water Feasibility Study, 1999
- Record of Decision, EPA, September 1999
- Consent Decree and Statement of Work, June 2001
- Remedial Design, O'Brien & Gere Engineers, Inc., June, 2002

- Forest Glen Site Five-Year Review, 1996
- EPA guidance for conducting five-year reviews and other guidance and regulations to determine if any new applicable or relevant and appropriate requirements relating to the protectiveness of the remedy have been developed since EPA issued the RODs.

### *Site Inspection*

Gloria M. Sosa conducted a site inspection on June 13, 2002. During the Site inspection, the RPM did not observe any stressed conditions in the surface water, wetlands and uplands which suggest the need for further environmental evaluations beyond those already conducted.

## **VII. Technical Assessment**

*Question A: Is the remedy functioning as intended by the decision documents?*

Yes, the relocation remedy is complete. Residents are no longer exposed to the contaminants that are present in the soil. As temporary measures, an area of highly contaminated soil within the former Subdivision was covered in concrete and a fence was erected around the perimeter of the Site. There is no one drinking the ground water as potable water is provided by a public-water supply. The Site is protective of human health now, and it will be fully protective of human health and the environment when the soil and ground-water remedies have been implemented.

*Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives used at the time of the remedy still valid?*

Yes. There are no major changes in the cleanup standards, toxicity factors or Applicable or Relevant and Appropriate Requirements (ARARs) known to the RPM which would affect the remedies selected at the Site. Currently the Site is vacant and fenced. After cleanup, a Site reuse plan will be implemented which will ensure that the Site will be used in a manner that is protective of human health and the environment.

*Question C: Has any other information come to light that could call into question the protectiveness of the remedy?*

No.

**VIII. Recommendations and Follow-up Actions**

Table 2, below, summarizes the recommendations and follow-up actions identified as part of the five-year review.

<b>Table 2: Recommendations and Follow-up Actions</b>						
<b>Issue</b>	<b>Recommendations and Follow-up Actions</b>	<b>Party Responsible</b>	<b>Oversight Agency</b>	<b>Milestone Date</b>	<b>Affects Protectiveness (Y/N)</b>	
					<b>Current</b>	<b>Future</b>
Soil Remedy	Completion of the soil remedy selected in ROD 3	Goodyear	EPA	June 2003	N	Y
Ground-Water Remedy	Implementation of the ground-water remedy selected in ROD 3	Goodyear	EPA	Sept 2003	N	Y
Controls	Implementation of institutional controls	Goodyear	EPA	Sept 2003	N	Y

**X. Protectiveness Statement**

The contamination at the Forest Glen Subdivision Site is under control. There is no exposure to human receptors from site-related contaminants and no exposure is expected. The site is currently protective and will be fully protective of human health and the environment when the soil, sediment and ground-water cleanups are completed.

**XI. Next Review**

The next five-year review for the Forest Glen Subdivision Site should be completed before September 2007.

Approved:

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## **List of Acronyms**

EPA	(United States) Environmental Protection Agency
FS	Feasibility Study
MCL	Maximum Contaminant Level
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
OU	Operable Unit
RI	Remedial Investigation
ROD	Record of Decision
SVOCs	Semi-volatile organic compounds
TICs	Tentatively Identified Compounds
VOCs	Volatile organic compounds